The Bulletin

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School Year 1958-1959

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The BULLETIN of the National Institute for Architectural Education invites the submission of manuscripts, news items, and notes from students and professionals. The reports of the competitions are presented as an unofficial opinion of the author and should not be interpreted as the collective opinion of the evaluating jury. Furthermore, the NIAE cannot be held to account for any statements or opinions printed in this magazine.

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THE BULLETIN of the NATIONAL INSTITUTE FOR ARCHITECTURAL EDUCATION

VOLUME XXXV Number 1 School Year 1958-1959 Page 1

Realizing that the BULLETIN of the N I A E can perform a greater service than merely presenting reports and reviews of the student competitions conducted on a national scale, the National Institute for Architectural Education is including additional material in this publication. The new material will be articles and items of information which will be helpful and it is hoped stimulating to students in their current research or other studies as well as in their future professional career.

Students, educators and architects are invited to suggest topics for articles, or place requests for information, or to submit treatises on subjects which they consider would be of interest and benefit. A discussion or an exchange of views through the means of this magazine are encouraged. It is hoped the student-body and others will cooperate in disseminating architectural information.

The subscription rate to the Bulletin of the N I A E with photographs of the designs adjudged as the best entries in the national student competitions, is $25.00 for the school year; a subscription without the photographs is $2.00 for the school year. Mailing address for all correspondence is National Institute for Architectural Education, 115 East 40th Street, New York 16, N.Y.

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This year the N I A E launches its new policy which offers students participation in 10-day sketch problems instead of major projects as in the past. It is hoped that this change in emphasis will encourage new directions in the development of creative concepts by students of architecture.

The specific problems are designed to bring the powers of imagination into play so that original, exciting, and ingenious solutions may result from the student's creative activity. All of the projects have simple, direct, and fundamental requirements which are devoid of complicated details. Their solution should help the student achieve a better understanding of structure and its appropriate expression in design.

There are three problems in the fall series of problems, each of which is to be completed in any ten consecutive days before January 19, 1959.

Elementary design, "A Sauna" for the Kenneth M. Murchison Prize

Intermediate design, "A Center for Sports Car Enthusiasts" for the Kawneer Company Prize and

Advanced design, "A Young Grandparents' Housing Complex" for the Hirons Alumni Prize.

It seems apparent that in these sketch problems the instructor's participation can readily be limited to an introductory analysis of the project. Where this is done the student could then be permitted to complete the final development of the work on his own initiative.

The N I A E hopes that these exercises will become welcome interludes in the design programs of the architectural schools. Many teachers and students have found that the short sketch problem effects a desirable change of pace in the organized curriculum.

The N I A E will award prizes to the outstanding projects and may exhibit them at its headquarters, 115 E. 40th St., New York 16, N.Y.

LLOYD WARREN FELLOWSHIP 1959

Changes made in the Fellowship Competition rules by the N I A E should give this coveted prize of $5000 a much wider appeal among students and universities.

The preliminary competition consisting of a 3-day sketch is open to qualified seniors and graduates of all colleges and schools of architecture. Other qualified candidates should apply to the NIAE, 115 E. 40th St., N.Y. 16.

The 3-day sketch will be judged locally by a jury selected by the school. From each local judgment one finalist (two additional if their work warrants it) will be chosen. The first finalist will be awarded the N I A E Trophy designed by Constantino Nivola.

The final competition will be from five to six weeks and will be judged in New York by a blue ribbon jury of architects and educators. In addition to the Scholarship award of $5000, the second place will be awarded $500 and the third place $250. In addition to these awards there will be eight prizes of $100 each for the best entry from each Association of Collegiate Schools of Architecture region.

The Preliminary 3-Day Competition is scheduled to be held February 6 through 9, 1959. The final competition for the selected finalists is scheduled for the period February 24 through April 7, 1959. Final awards will be announced sometime in April or early May.

Applications for programs for the Preliminary 3-day Competition should be received by the Committee on Scholarships, 115 East 40th St., New York 16, N.Y. no later than January 5, 1959.

MISCELLANEA

WHAT EVERY ARCHITECTURAL STUDENT should know:
The Architectural Index published yearly lists the articles of the leading architectural magazines; the address is 517 Bridgeway, Sausalito, Calif. This index is a great help in research as it obviates poring through numbers of magazines voluminous with advertisements. It also covers magazines which may not be immediately available.

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LIGHT, THE BASIC ELEMENT OF ARCHITECTURAL DESIGN

BY GERALD B. EWING

About the Author: Early studies in painting and music led Gerald Barcroft Ewing to an interest in the emotional effects of light, culminating in work in New York with Thomas Wilfred at the Guildhall School of Music and Drama in London, and Yale University. During World War II he served with Army Engineer Intelligence, attached to the R.A.F. After the war, he established offices in New York and Connecticut as lighting consultant. Outstanding work by Ewing, where lighting plays a major part in the conception and development of the architectural design, includes Dept. of Commerce Trade Fairs at Milan and Paris, and the Information Center just completed at Colonial Williamsburg. Atoms for Peace Exhibit for State Department, Lighting Survey for Time, Inc. His interest now is centered in the further development of art of light as a positive design element.

ARCHITECTURE

is man-made environment perceived through his senses. The major link between man and his perception of physical elements, is LIGHT.

BUILDING MATERIALS & CONSTRUCTION

are used to create form, space, texture, color, and motion; perceived through VISUAL SENSATION.

ALL SENSES

contribute to VISUAL SENSATION which is in direct contact with the emotions.

TASTE & SMELL - things appetizing are VISUALLY ATTRACTIVE.

SOUND - VISUAL PICTURES are composed by rythm and sound of music, speech, both poetry and prose.

TOUCH - textures already foretold by eye give the will to touch caused by VISUAL APPEARANCE.

SIGHT - produces direct emotional response, both through conscious perception and subliminal status.

THEREFORE:

the thought, feeling, attention, imagination, association, and emotion, that govern our response to ARCHITECTURE, are directly related to LIGHT, THE BASIC ELEMENT OF ARCHITECTURAL DESIGN.

All human responses to architecture are received directly and indirectly through the sense of sight. Architectural design therefore, depends primarily on a knowledge of light and human reactions to it in all its physiological and psychological aspects. This criteria must be met before the mechanics of the building construction are determined, as the primary function of architecture - its begin-

ning and end, - is the creation of a suitable environment for man.

In basic terms, this is simply a control of the impressions conveyed to our brain thru exercising a recognition of these impressions and their vehicles. The senses enable us to become acquainted with properties and states of external things, such as form, size, shape, density, color, and motion. The senses are usually spoken of as being five in number, namely - sight, hearing, touch, smell and taste.

Architecture, which is man-created environment, effects all senses. Shown graphically, the most important sensation is our sense of sight, which allows us to decern and appreciate the effect of form, space, color, texture, and motion. Carried one step further, we can easily perceive that visual design depends entirely on the control of light - for all we see is light reflecting to our eyes from various objects, which in turn, registers on our nerves, mind, and memory.

The major sensations created by architecture on the human mind are received either directly or indirectly by sight. Form, space, texture, color, and motion, all receive direct reaction thru sight-awareness. However, even the other senses of hearing, touch, taste, and smell, are indirectly affected by the mental picture and memory association which depends for the most part on sight emotions. In a suggestive way, the sounds, smells, taste, and touch of things, brings before our minds a quasi-visual image of things which we more or less definitely feel through sight emotions. These express in elemental sensations some innate quality that enables them to move in sympathy with our feelings in a consistant manner, both by repetition in an individual, and by similar reactions on various people. individually and in groups. Hence, a group of concert-goers will respond as a unit to a performance of an inspired piece of music. Just as our dreams are often much more poignant than the actual sensations caused by real occurrences, the suggestive quality of music has the same strange quality of effecting us, related in some way to our sight-sensations. Or the smell of perfume, for instance, will bring back visual memories, the touch of a remembered texture, the taste of a certain food or drink, will all set in motion a series of thoughts that are connected with mental images. Poetry too, can loosen this force within us in its power to call forth a mood and visual image.

Thus the emotions we first receive by sight thru direct exterior influences, the other senses are able to create by suggestion. When this becomes a living vibration that can be found in the best of arts, it has the quality of poetic principle that governs all the arts. Unless the student of architecture comes into closer touch with this poetic principle and accepts with the eyes what is intended for the spirit, who sees and is not blind to its importance, his work cannot stand on a sound basis.

The first step therefore, toward a general appreciation of this poetic principle is taken where young people learn to distinguish between inspired creation, and the mediocre approaches to the arts, so they may be able to better appreciate the thought, effort, and deep understanding necessary to create anything worth-while.

True art is universal in appeal, but to arrive at this approach we must appeal to the basic emotions of man. The purely pseudo-intellectual approaches to any art may interest those who have acquired a state of mind that delights in the perfection of insignificant details. The great artists however, have always been of a calibre more interested in striving for great ideals, no matter how seemingly impossible

or impractical, than the mere perfecting of a safe, sure, mediocre idea. Our students must be inspired to strive for these great ideals. The prime purpose in the schools must be the search for knowledge in a climate of philosophical thought, that acknowledges, responds to, and fully appreciates the great cultures of the past, that have lifted man out of the swamp and jungle struggle for survival, into a state of mind more associated with the Gods, in serenity of thought and action. Architecture must aspire to a higher purpose than mere shelter from the elements, to achieve anything more spiritual than the jungle chaos.

Let's return then, to the premise that architecture is primarily a visual sensation, and following this thought further, it becomes obvious that vision is a message received by the brain, thru the eyes, which in turn react to vibrations of light. These vibrations were set in motion by a source, - the sun, or an artificial lamp, and generally reach our eyes after reflecting from one or more surfaces. So the scientific approach to architecture, like all visual arts, must start with the study of light and its reactions on the human eye and mind. Unless all of the architect's design is channeled to this one idea, the mere knowledge of materials, construction methods, or ornament is to no avail. A lack of this basic understanding of the emotional effects in terms of light that his building will create, precludes achieving a building worthy to be called true architecture.

Recent reports from various scientific surveys confirm the principle that light is primarily an agent of human perception, and its effective control depends on this understanding. No longer is it rational to think of light as mere general illumination, to be classed with the utilities. No longer can the study of electricity and electrical engineering be considered as the main requisite of a light designers background. Light design is VISUAL design, and as far removed from the study of electricity as piano tuning is from musical composition. We must realize that in designing with light, we are primarily dealing with human perceptions, and the scientific study of light is primarily a study of HUMAN REACTION TO, not the physical property OF light, in terms of radiant energy.

Some very important research has been conducted recently in this direction. The official interpretation of the results is not yet available, however, some basic principles are apparent. From the Photometric Laboratory of the University of California, Professor D. H. Finch, has conducted a project consisting of the measurement of actual contrast, in several tasks, when illuminated from different angles. This has given a scientific basis to the importance of the direction of light in relation to the eyes, for visibility. The importance of directional light for the discernment of three dimensional form has been generally known, however, the importance of directional light is observing contrasting values on an apparently flat, matt, surface, such as pencil lines on white paper, has until now, been disregarded. These tests disclose that the whole conception of lighting design as practiced from the basis of footcandle values on the horizontal plane, is in error, for it was generally considered that by raising the levels of general illumination a few tens of footcandles, visibility was greatly enhanced - regardless of the direction of light.

Another verification of the error in the footcandle approach to lighting came recently with a report from Dr. H. Richard Blackwell, of the Vision Research Laboratories, University of Michigan. After twelve years of studies, consistent results were obtained which appear summarized in a single curve of which all points are of equal visibility. From this data

it is apparent that huge quantities of light are needed in tasks of poor contrast values.

By combining these separate studies it follows that if the lack of good orientation, or directional light causes poor visibility by reducing contrasts, good visibility can be obtained by (1) improving the direction of light, or (2) by supplying many times the existing number of footcandles from the same general lighting. Obviously, it is more logical and practical, to improve the direction of light than to overload the interior with light which becomes impossible to control - both in terms of comfort from glare and aesthetic variations of visual pattern, aside from the considerations of overloading of heat on the air-conditioning equipment, and the additional cost of fixtures, wiring, power consumption and maintenance. As an example an installation using high levels of general illumination may need 1000 or more footcandles to equal the visibility that could be obtained with 10 footcandles using an improved direction of light in the layout.

This coincides with my own past experience in light design, in which light has been considered in terms of human vision and perception, rather than quantities of radiant energy measured by mechanical meters. I feel we are approaching a new Age of Reason, in respect to architectural light design.

MISCELLANEA

Hospitals

Everybody in the profession at one or more times needs information for designing a hospital. One of the finest sources of information is the "Hospital Literature Index". This is published by the American Hospital Association, 18 E. Division St., Chicago.

Every five years, for example from 1950 through 1954 inclusive, these indexes are combined into one volume.

The above is for detailed information and would have to be obtained from the Asa S. Bacon Memorial Library administered by the American Medical Association, through a member of the American Hospitals Asso.

"Student Showcase" - a new magazine for and by advanced students - provides aspiring writers and artists with a new medium that reaches the nation's leading publishers, art studios and advertising agencies. Your subscription renders your work eligible for publication and full credit in this magazine. Write Box 753, Chicago 42, Illinois.

For basic information on hospitals see "Design and Construction of General Hospitals" published by U. S. Department of Health, Education & Welfare Washington, D. C.

NATIONAL INSTITUTE FOR ARCHITECTURAL EDUCATION ANNUAL MEETING and ELECTIONS

The NIAE will hold its Annual Meeting at its headquarters, 115 East 40th Street, New York, N. Y.

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ADVANTAGES OF DIRECT and SEMI-DIRECT LIGHTING IN HOSPITALS

By Henry L. Logan
From A.I.A. File # 31 F 23

The choice of lighting units for hospitals depends largely on the need to cut maintenance costs. The cost of maintaining the mechanical and electrical equipment of hospitals is from three to four times the cost of maintaining all other parts of the building.

Even the choice of light source (incandescent or fluorescent) may affect maintenance costs considerably.

The time to think of maintenance costs is when the building is being designed; and the place is in the specifications. The Hospital Facilities Section of the U. S. Public Health Service makes these suggestions: 1) Simplify the design; 2) Standardize as much as possible; 3) Use systems of proven merit; 4) Employ only the best materials and equipment.

Complicated designs, lack of standardization, adoption of little known systems and substitues for the first grade equipment may load the building with top-heavy maintenance costs.

Much subsequent maintenance expense can sometimes be laid at the door of the "or equal" clause in specifications. This clause, the purpose of which is to ensure competition, is often operated by easy interpretation so as to down-grade specifications. Thus, jobs planned by architects and engineers to be economical and trouble-free may turn out to be expensive headaches. The dollar saved by apparently innocent substitution, may cause nine other dollars to be spent later on.

The choice of light source may affect maintenance costs considerably. No statement can be made that is safe from contradiction in a specific case; but, all other things being equal, maintenance costs tend to run higher with fluorescent lighting than with incandescent, where annual burning periods are short. This is due to the relatively large size fluorescent equipment (requiring more handling and so more manpower), its more expensive lamps (partly offset by longer life), its auxiliaries, starters, ballasts (requiring replacing as well as the lamps), and its more complex wiring requirements.

The saving in current consumption which fluorescent equipment may make possible in a given case, may be insufficient to offset the amortization of the first cost of installation, plus the accompanying higher maintenance costs. Every case should be evaluated on its merits.

A rough rule of thumb is to use incandescent where lighting levels below 50 footcandles are desired; and particularly where the annual burning period is below 1000 hours; and to investigate possible savings by using fluorescent where longer burning periods, higher lighting levels, or both are indicated.

There are some exceptions to using fluorescent for high levels such as (a) laboratories where workers may object to the effect of fluorescent lighting on tissue specimens, and (b) medical examination and treatment rooms, morgues and surgeries, where high illumination is needed (160 to 3000 footcandles). Fluorescent lamps do not permit the concentrations of light required for such purposes.

Lighting maintenance is not only affected by the choice of light source, but of method.

Indirect lighting sends light first to the ceiling from which it is difussed around the interior. It is the most expensive type of lighting to operate and maintain, taking more wattage for a given level of light than other methods; and is highly vulnerable to dirt, both on the equipment and the ceiling.

It has the single merit of concealing the light source and of presenting the eyes instead with large ceiling surfaces having variable but lower brightness than the lamp. The premium paid for this is rather high.

The maintenance required to keep an indirect system up to par is usually greater than owners will pay. Even in locations with "clean" air, outside of cities, monthly washing of equipment is necessary and annual repainting. Practical designers, being aware of this, build excess capacity into the system, so that as the lighting drops the smaller lamps may be replaced by larger, or in the case of fluorescent the equipment may be turned on with twin tubes, and sockets ready for the third tube when the owners need it. This adds considerably to the operating cost. It is uneconomic to use a design factor large enough to compensate for lack of maintenance.

Semi-indirect lighting runs second highest in cost, and is less comfortable than indirect. Its principal hospital application is in sick rooms for 4 beds or larger.

Semi-direct lighting sends most of the light downward, and the smaller part to the ceilings and walls. It required less wattage than Indirect or Semi-Indirect. Semi-direct lighting is particularly suited to the lighting of hospital offices, public spaces, classrooms and corridors. Recommended cleaning and repainting schedule is: cleaning twice per year, repainting each five years.

Direct lighting sends all the light directly downward and depends upon reflection back from the floor and room interior for ceiling illumination. It is the most efficient over the life of the installation, but must be used with cooperating finishes (such as are standard practice in hospitals), and in the absence of polished surfaces of large area. That is, the room finishes should be, as they are in hospitals -- matte.

MISCELLANEA

ARCHITECTURAL RESEARCH

The A & M College of Texas, has an interesting and praiseworthy architectural research program described in a well presented brochure. The program covers investigation of technical problems as related to architecture.

The program has the opportunity of showing the great value of architects in certain aspects of technical problems. The research is conducted primarily by full-time research architects, a physicist and members of the teaching faculty. Graduate and advanced undergraduate students participate in the investigation of problems which are within their particular fields of interest, In addition other architects and technical experts are called in as consultants.

The program includes projects sponsored by private corporations and government agencies. The brochure gives a list of the publications of this Division and projects in current research. Chosen at random some of the projects are "Effects of Landscaping on Natural Lighting", "Effects of Direct Sun Rays on Interior Lighting", "Effects of Sound on Buildings", "Summary Report on Natural Ventilation", "Low Cost Self-Built Housing","Solar Radiation and its Effects on Buildings", to name a few of the fifteen listed.

NATIONAL INSTITUTE FOR ARCHITECTURAL EDUCATION

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Incorporated 1916, under the Regents of
the University of the State of New York